ANALYTICAL FURNACE WITH PREDICTIVE TEMPERATURE CONTROL

ABSTRACT OF THE DISCLOSURE

An analytical furnace includes a predictive temperature control which is trained to model crucible temperature during analysis by employing a pair of temperature sensors, with one sensor being mounted in the furnace in fixed relationship and a second sensor which can be positioned within a crucible for training and tuning a crucible temperature profile, such that the crucible temperature in which a sample is placed is modeled and its response to the application of energy to the furnace in accordance with the furnace's dynamic thermal characteristics is known. By modeling the temperature profile within a crucible, the furnace can be controlled to provide a faster, more accurate analysis and prevent excessive overshooting of temperature as desired temperature plateaus are approached.